For this assignment, use Oracle or MySQL.

Hand in the printouts of your interaction with the DBMS. Please, staple the printouts. On the cover page, indicate the class number, your name, student ID, and the DBMS you used. The simple manuals are available at the course web site and the DBMS product’s web site.

**PART I**

1. [20-point] Create the database of HW#2. Determine an appropriate data type for each attribute. Use "create table~" statements and "create index~" statements to create the tables and appropriate index structures. Note that in SQL-92 and 99 (aka SQL II and III) standards (and many DBMS implementations), all primary key attributes are implicitly declared to be "not null". However, in this assignment, declare primary key attributes to be "not null" explicitly. In SQL, foreign key attributes are allowed to be null. However, sometimes, to satisfy "total participation" in ER-diagram, related foreign key attributes should be declared to be "not null". Print the statements you used to create this database and the results of them.

2. [10-point] Populate your database by inserting 10 or more tuples into each table.

3. [20-point] Create the following queries using SQL: Write the queries in the HW#2 in SQL. Print the SQL statements of your queries as well as the results of your queries.

**PART II**

1. [20-point] Create a database with the following tables (relations):

```
supplier (SupplierNo, SupplierName, City):
   <S1, Smith, Laramie>
   <S2, Jones, Chicago>
   <S3, Blake, Chicago>
   <S4, Clark, Boston>
   <S5, Adams, Boston>

item (ItemNo, ItemName):
   <I1, Nut>
   <I2, Bolt>
   <I3, Cog>
   <I4, Cam>

supplied (SupplierNo, ItemNo, Quantity):
   <S1, I1, 400>
   <S1, I2, 300>
   <S1, I3, 500>
   <S2, I1, 100>
   <S2, I2, 200>
   <S3, I3, 300>
   <S4, I1, 100>
   <S4, I3, 100>
```
Create the relations and index structures. Then insert the above tuples into the tables. The types of attribute Quantity is integer, while the types of all other attributes should be varchar. Print out all three tables using "select * -".

2. [30-point] Write the following queries in SQL:

   a) List all different items (ItemNo, ItemName) supplied by at least two suppliers (no repetition).
   b) List all suppliers (SupplierNo, SupplierName) who supply item "Bolt".
   c) List all items (ItemNo, ItemName) supplied by either S2 or S4.
   d) List all items (ItemNo, ItemName) supplied by both S2 and S4.
   e) For each supplier that supplies at least one item, list SupplierNo and the total quantity supplied by the supplier.
   f) For each item supplied at least once, list ItemNo and the number of suppliers that supply the item.

Print the statements of your queries as well as the actual results of the queries.

Enjoy.

Good luck.